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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/854,940	05/15/2001	Yu Wang	839-1012	7951

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EXAMINER	
PEREZ, GUILLERMO	
ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 01/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/854,940	WANG ET AL.
	Examiner	Art Unit
	Guillermo Perez	2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 October 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 3-8, 12, 14-17, 19-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Laskaris et al. (U. S. Pat. 5,548,168).

Referring to claim 1, Laskaris et al. disclose a synchronous machine having a rotor (10) comprising:

a rotor core (14);

a super-conducting coil winding (20) extending around at least a portion of the rotor core (14), the coil winding (20) having a coil end section adjacent an end of the rotor core (14), and

end coil support (66,72) attached to and bracing the end section and being thermally isolated from the rotor core (14), wherein the end coil support (66,72) attaches along a side of the end section parallel to a rotor axis (figure 4).

Referring to claims 3 and 19, Laskaris et al. disclose that the end coil support (66,72) includes a pair of plates (72) between which sandwiched the coil end section.

Referring to claims 4 and 20, Laskaris et al. disclose a cryogenic coupling (84,86) providing cooling fluid to the coil winding (20), wherein the end coil support (66,72) is cooled by conduction from the coil winding (20).

Referring to claims 5 and 21, Laskaris et al. disclose a rotor end shaft (34) having a slot (36) to receive the coil end section and end coil support (66,72), and the end shaft (34) is thermally isolated from the end coil support (66).

Referring to claims 6 and 22, Laskaris et al. disclose that the end coil support (66,72) braces an entire length of the coil end section.

Referring to claims 7 and 23, Laskaris et al. disclose that the end coil support (66,72) is transverse to an axis of the rotor core (14).

Referring to claims 8 and 24, Laskaris et al. disclose a second coil end section adjacent a second end of the rotor core, and a second coil support bracing the second end coil end section (figure 1).

Referring to claim 12, Laskaris et al. disclose a method for supporting a super-conducting coil winding on a rotor core of a synchronous machine comprising the steps of:

- bracing an end section of the coil winding with an end coil support attached to at least one side of the end section parallel to a rotor core axis;
- assembling the coil winding, end coil support and rotor core;
- attaching a rotor end shaft to the rotor core;
- thermally isolating the end coil support from the rotor core and shaft.

Referring to claim 14, Laskaris et al. disclose that the assembling step includes inserting the end section of the coil and the coil support into a slot of the rotor end shaft.

Referring to claim 15, Laskaris et al. disclose that the bracing step includes applying plates on opposite surfaces of the end section, wherein the opposite surfaces are parallel to the rotor coil axis.

Referring to claim 16, Laskaris et al. disclose cryogenically cooling the coil, and cooling the end coil support by heat transfer between the coil and the coil support.

Referring to claim 17, Laskaris et al. disclose a rotor for a synchronous machine comprising:

a rotor core having at least one rotor core end orthogonal to a longitudinal axis of the rotor;

at least one end shaft attached to the rotor core end;

a race-track super-conducting (SC) coil winding extending around the rotor core and having a coil end section adjacent the rotor end;

a coil support brace attached to the coil end section and thermally isolated from the rotor core and rotor end shaft, wherein the coil support brace is affixed to a surface of the coil end section parallel to the axis of the rotor.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 9-11, 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laskaris et al. in view of Rios (U. S. Pat. 4,277,705).

Laskaris et al. substantially teaches the claimed invention except that it does not show that the coil support further comprises side supports attached to a long side section of the coil. Laskaris et al. do not disclose that the coil supports further comprises at least one tension rod extending transversely through the rotor core, and coil housings attached to opposite ends of the tension rod, wherein the coil housings each attached to an opposite long side section of the coil. Laskaris et al. do not disclose that the tension rod extends through a conduit in the rotor core.

Rios discloses that the coil support further comprises side coil supports (30) attached to a long side section of the coil (16). Rios discloses that the side coil supports (30) further comprises at least one tension rod (32) extending transversely through the rotor core, and coil housings (30) attached to opposite ends of the tension rod (32), wherein the coil housings (30) each attached to an opposite long side section of the coil (16). Rios discloses that the tension rod (32) extends through a conduit in the rotor core. Rios' embodiments have the purpose of preventing the movement of the windings in the rotor.

It would have been obvious at the time the invention was made to modify the machine of Laskaris et al. and provide it with the support configuration disclosed by Rios for the purpose of preventing the movement of the windings in the rotor.

3. Claims 2, 13, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laskaris et al. in view of Nottingham (U. S. Pat. 4,072,873).

Laskaris et al. substantially teaches the claimed invention except that it does not show that the coil support is a split clamp. Laskaris et al. do not disclose that the end section is braced with a split clamp.

Nottingham discloses that the coil support is a split clamp (25,26). Nottingham discloses that the end section is braced with a split clamp. Nottingham's invention has the purpose of securing the end turns in a highly conductive and mechanically strong union.

It would have been obvious at the time the invention was made to modify the machine and method of Laskaris et al. and provide it with the split clamp disclosed by Nottingham for the purpose of securing the end turns in a highly conductive and mechanically strong union.

Response to Arguments

Applicant's arguments filed October 24, 2002 have been fully considered but they are not persuasive.

In response to Applicants remark that Laskaris does not disclose a coil support bracing the end section of the coil, it must be noted that the limitation is shown in figure 4 and in column 3, lines 32-36.

In response to Applicants remark that Laskaris does not disclose a coil support on one or both sides of the end coil section parallel to the rotor axis, it must be noted that Laskaris provides plates 72 to maintain the coil centered in the thermal shield (column 3, lines 48-53 and lines 58-60). The plates 72 are supporting the coil on sides parallel to the rotor axis.

In response to Applicants remark that the plates 72 in Laskaris do not sandwich the end section of the coil, it must be noted that coil 20 is inserted tightly between the plates 72 (sandwiched: "To insert (one thing) tightly between two other things of differing character or quality". *The American Heritage® Dictionary of the English Language, Third Edition* copyright © 1992 by Houghton Mifflin Company.).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Perez whose telephone number is (703) 306-5443. The examiner can normally be reached on Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308 1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703)

305 3432 for regular communications and (703) 305 3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

Guillermo Perez
January 8, 2003

NESTOR RAMIREZ
SUPERVISORY PATENT EXAMINER
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